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ORGANIZATIONAL AND MILITARY IMPACTS OF HIGH-TECH SURVEILLANCE AND DETECTION SYSTEMS FOR UN PEACEKEEPING

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PROJECT REPORT 535

ORGANIZATIONAL AND MILITARY IMPACTS OF HIGH-TECH SURVEILLANCE AND DETECTION SYSTEMS FOR UN PEACEKEEPING

by
S.B Flemming

December 1992

OTTAWA, CANADA

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ORGANIZATIONAL AND MILITARY IMPACTS OF HIGH-TECH SURVEILLANCE AND DETECTION SYSTEMS FOR UN PEACEKEEPING

by

S.B. Flemming

Recommended: SBB

S.B. Brown
Director of Social and Economic Analysis

Approved: P.R. Anderson

P.R. Anderson
Director General Operational Research

OTTAWA, CANADA

DECEMBER 1992

ABSTRACT

This report reviews the findings of a study of organizational and military impacts of procuring advanced surveillance and detection systems for the CF for use in peacekeeping.

RÉSUMÉ

Ce rapport présente les conclusions d'une étude portant sur les impacts organisationnelles et militaires de l'achat de systèmes sophistiqués de surveillance et de détection pour les missions de maintien de la paix des FC.

EXECUTIVE SUMMARY

This report presents the findings of the first phase of an examination by ORAE and CRAD of surveillance and detection systems for use in peacekeeping by the CF. The study was originally intended to be part of a joint effort by Canada, Norway, and Sweden for the UN; when Norway cancelled its participation, DND altered the study mandate and continued with independent research for its own use. The first phase, the findings of which are reported here, examined a broad range of organizational and military impacts of introducing new systems into the CF for use in the performance of peacekeeping. The second phase surveyed available technologies in the electro-optical, radar, and unmanned air vehicle sectors, and included initial critical discussions of the relative technical merits and cost of the systems involved.

Data were gathered in this phase from interviews with CF personnel having extensive experience in peacekeeping operations. The benefits of introducing sophisticated surveillance and detection systems are relatively clear and numerous sources of technical and promotional information are readily available in this regard. Respondents to this study were asked to consider negative consequences, with the aim of permitting a more balanced appraisal in future procurement efforts. Impacts were examined in the following areas: the effectiveness of UN diplomatic peace processes, the effectiveness of UN peacekeeping operations, and consequences for the Canadian Forces.

Two main findings were generated. Firstly, claims of significant cost savings and improvements in peacekeeping effectiveness through systems deployments and personnel reductions deserve rigorous evaluation. Respondents doubted that significant personnel reductions would be possible or advisable in many existing peacekeeping operations or in the higher-intensity operations that may be undertaken by the contemporary UN. A program of analyses addressing claims of advances in efficiency and effectiveness is outlined in the report. Secondly, the identification of systems that enhance fundamental military capabilities, or are useful in the performance of multiple roles while improving peacekeeping effectiveness, is a recommended procurement strategy. If systems having applications limited chiefly to peacekeeping are sought for acquisition, it is unlikely that a single system, or a baseline mix of systems, will be identified that can be useful across the diverse operation environments typical of peacekeeping deployments.

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ACKNOWLEDGEMENTS

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ORGANIZATIONAL AND MILITARY ASPECTS OF HIGH-TECH SURVEILLANCE AND DETECTION SYSTEMS FOR UN PEACEKEEPING

1. The post-Cold War, Gulf War, and German re-unification period has to this point seen dramatic transformations in the viability and visibility of the United Nations (see Fortier, 1992; Delvoie, 1990). The concomitant enhancement of UN peacekeeping potential, in concert with the apparent contemporary trend toward more forceful "peacemaking", has directed substantial attention to the capabilities of peacekeeping forces in general, and to their equipments in particular. Additionally, economic circumstances in member states typically participating in UN operations and missions have in recent years amplified budgetary pressures. It was and is widely believed that the introduction of high-tech surveillance and detection systems into UN peacekeeping operations and missions would both enhance effectiveness and generate significant cost-savings. If this were the case, such might allow significant reductions in the number of troops needed to fulfil peacekeeping mandates. It is this belief in the economy and effectiveness to be gained through high-tech solutions in the performance of peacekeeping that is the focus of this report.

2. This project was initiated in 1990 as the Canadian contribution to a joint effort with defence research agencies of Norway and Sweden. The Canadian element was to have been conducted by ORAE and CRAD. It was originally envisaged that the tri-lateral study would accomplish an analysis of the utility of surveillance and detection system options for use in peacekeeping. Ultimately, it was hoped that the work would lead to the establishment of the feasibility, cost, and a schedule of development leading to the demonstration of a new system to be considered for procurement by the UN. The potential system options which might be procured in accomplishing these duties are, of course, numerous, ranging from equipment directly enhancing the capability of peacekeeping personnel as they are now deployed, such as night observation devices, to

spaceborne and airborne remote surveillance systems, such as the Soviet Soyuzcarta satellite and the French "SPOT", as well as Synthetic Aperture Radar (SAR). Canadian responsibilities in the broader project were well underway at both ORAE and CRAD when Norway announced in March of 1990 that it would not continue with the study. As substantial resources had been devoted to the Canadian element of the study, and interest had been expressed in it within DND and other Departments, it was determined that a substantially modified version of the broader study would be completed independently for internal use. As a result, the research and its findings reflect Canadian and CF concerns to a far greater degree than would otherwise have been the case. Given the resources available for the work, sophisticated technical systems assessments could not be conducted. More importantly, the central focus on providing information to assist the UN procurement process was not maintained. The completed Canadian project encompasses the following:

(1) A review of organizational and military implications of the introduction of new high-tech systems, on three levels: political or diplomatic negotiation among hostile combatants, the effectiveness of the forces on the ground at the sharp-end of peacekeeping, and impacts on the Canadian Forces.

(2) The way ahead: the specification of analytical work suggested by the findings from the first phase that might be conducted prior to initiating the procurement process.

(3) A comprehensive survey of available off-the-shelf systems that might be employed in a peacekeeping context, with an initial critical discussion of their potential technical and operational merits.

3. The findings from the first and second phases are contained in this report. Data collection has been completed for the third aspect outlined above, and the resulting systems survey is contained in a separate report[1]. Findings generated by the study to this point, namely those concerning potential organizational and military impacts and the specification of analytical tasks which might be considered prior to beginning, or in conjunction with the procurement process, are reviewed in this document.

4. Two main conclusions emerge from this study. Firstly, claims made by many with respect to the enhancements of effectiveness and efficiency to be gained from high-tech solutions to peacekeeping problems should be subjected to rigorous analyses. While benefits of this nature would almost certainly accrue under many peacekeeping conditions, a range of significant potential consequences of increased reliance on new systems should be considered prior to making serious efforts toward procurement. Secondly, emphasis on the procurement of systems that enhance overall military effectiveness is a recommended strategy in improving peacekeeping performance. The key consideration for the Canadian Forces (CF) in its procurement decisions with respect to peacekeeping operations to result from this study is the critical importance of identifying multiple role-capable equipments. The costs of purchasing and introducing sophisticated systems that are of use in a single role-performance environment were found, in the views of the respondents, to be considerable. Canadian peacekeeping prowess has derived from an historical point of view principally from the military effectiveness of the CF, suggesting that enhancing overall military capability in capital procurement is an appropriate means of improving CF performance in a peacekeeping role. In the following section, which precedes more detailed discussion of the findings, the methodology employed in collecting the data is briefly reviewed.

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[1] "Surveillance and Detection Systems for United Nations Peacekeeping", ORAE Project Report 611, by S.B. Flemming, R. Charpentier, G.J. Marwood, and R.H. Chesney.

METHODOLOGY

5. The data for this work were generated through interviews of serving CF personnel with substantial experience in peacekeeping activities. A semi-structured interview schedule was employed to maximize the scope of the responses and the potential for acquiring useful unanticipated information. A total of 25 personnel were involved in this manner, ranging from soldiers having served extensively "on the line" in UN operations to senior officers with experience of and insights into the politics of peacekeeping. Intensive interviewing was selected over the increasingly common Delphic and Satay techniques due to the tremendous diversity of the sample population. A survey of experienced personnel was also considered. While such would have provided findings that better reflect the attitudes and opinions of all experienced personnel, this would have meant a significant sacrifice in the depth of the information typically garnered through interviews. As a result, interviewing as many personnel with a variety of UN experiences as resources permitted was selected as the appropriate technique[2]. Confidentiality was guaranteed.

6. It was critical in designing the interview schedule to define what is meant by "peacekeeping operation". Respondents had to be provided with a consistent set of assumptions about the nature of such operations; a difficult task given the range of circumstances and environments under which UN troops have served in recent decades. The following distinctions were made clear to the respondents. Generally speaking, a peacekeeping operation involves "military personnel, but without enforcement powers,

[2] Most respondents allowed the tape recording of their interviews. Some requested an opportunity to respond to some questions on the interview schedule in writing after a day for reflection; this was permitted. Direct quotes from respondents which appear in the body of the paper were taken only from these sources; those taken from the written submissions exhibit greater clarity and precision than is typical of interview data.

established by the United Nations to help maintain or restore peace in areas of conflict"[3]. There are two categories of operations; peacekeeping forces and observer missions. Peacekeeping forces are lightly armed with defensive weapons and are responsible for the accomplishment of a mandate, while observer missions are small, unarmed, and typically employed in a monitoring and diplomatic capacity. In either case, the operation is established by the Security Council with the consent of the parties to the dispute, ensuring that the formal mandate respects the sovereignty of the respective nations involved. More forceful "peacemaking" is not included in this definition of operations. As well, respondents were asked to focus on operations involving peacekeeping forces rather than observers[4]. From this initial set of assumptions, respondents were encouraged to make general comments on the utility of systems for all operations, followed by insights drawn from their experiences of specific operations.

7. The benefits of introducing new surveillance and detection systems are relatively clear. These include, among others, improvements in the accuracy and timeliness of information into the hands of commanders (see Wallen, 1983; Mandell, 1987). Additionally, a great volume of promotional information on equipment performance is readily available. This research focused in the design of the interview schedule on the identification of potential negative outcomes, in order to permit a more balanced assessment than is possible given the nature of the existing information in this area. Despite this focus on potential negative outcomes, the report should not be read as a condemnation of new systems. It is further important to note at this juncture that the information that follows does not reflect policy at any level; the research sought to acquire data from experienced personnel which might not ordinarily be examined in the procurement process.

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[3] in United Nations, 1985: 3.

[4] This definition of "peacekeeping operations" is assumed throughout this report.

SECTION 1: ORGANIZATIONAL AND MILITARY IMPACTS OF HIGH-TECH SYSTEMS

8. Canada has considerable expertise upon which to draw in peacekeeping efforts, and we must expect that increasing demands will be made in this regard. The dramatic and ongoing shifts in East-West relations have eased the ordinarily difficult establishment of peacekeeping operations and missions under UN-negotiated mandates (Delvoie, 1990). Canadian willingness to serve under UN colours is unlikely to abate, and the public strongly support the performance of peacekeeping by the CF. Equally importantly, Canada has made peacekeeping a priority for the CF - well-trained professional soldiers are employed in performing peacekeeping duties, while internationally there is a trend toward the use of civilian police and other specialists. The years have seen a large body of knowledge generated and maintained from these experiences by Canadians, and it is this repository of knowledge that this study was designed to incorporate into the decision-making process for equipment procurement.

9. As the recent successes of the UN have increased the visibility of peacekeeping, two factors have contributed to calls for the use of high-tech surveillance and detection systems in that activity. Perhaps most importantly, nations devoting a great deal of effort to personnel-intensive peacekeeping are seeking to reduce costs in the midst of an international recession. Secondly, technological advances have been widely communicated by scientific communities and consultants, as well as by producers of equipments (who are similarly dealing with a recession). The belief that peacekeeping can be done better and more cheaply with fewer people and more systems has emerged from this contemporary circumstance. As is always the case with new technologies, however, the relationships among operators, equipments, and the concrete mandates to be performed are rarely fully explored. A full accounting of such is well beyond the scope of this

research. At best, a number of discrete factors that might be useful in planning for procurement have been identified.

10. Essentially, this research sought to identify the potential consequences of introducing high-tech systems into peacekeeping activities from a broadly organizational and military point of view. Three types of consequences emerged from the interviews with respondents. Each is briefly illustrated in the following pages. The most general of these, the effectiveness of UN political or diplomatic peace processes, will be considered first. Secondly, the effectiveness of the peacekeepers on the ground serving to separate combatants and diffuse tension is considered. Thirdly, the military consequences for the Canadian Forces are discussed. Following these three sections, the report concludes with an outline of suggested analyses which might be conducted prior to initiating the procurement of new systems.

EFFECTIVENESS OF THE UN DIPLOMATIC PEACE PROCESS

11. The success of peacekeeping operations depends on a wide range of factors. Perhaps chief among these from an historical point of view has been the "political" aspects - the willingness of the parties to seek mutually acceptable solutions, the accomplishment of a satisfactory mandate under which the peacekeepers may operate, good faith observance of the terms of the mandate by the combatants and so on. The process of adjudicating claims in a hostile environment is, of course, both complex and exceedingly delicate.

12. The relationship between the nature of the equipments employed by soldiers "on the line" and the conduct of formal negotiations among the parties to a dispute might seem tenuous to some. The link resides in the distance between these levels and the

autonomy afforded the peacekeepers. It is most important, in many peacekeeping circumstances, that the perceived impartiality of the troops and their commanders be protected by distancing them from the political enterprise as far as is practicable (see Haglund and Jones, 1989:6). It is a general concern of the respondents that the installation of sophisticated reporting systems may reduce this critical distinction to some extent. It is expected that the mass of information gathered by systems would encourage the establishment of closer links between negotiating teams and the peacekeepers maintaining the equipments.

13. In more specific terms, the personnel contributing to this study envisaged three potential problematic outcomes on the political or diplomatic level of introducing high-tech systems into peacekeeping. These comprised a potential diminished willingness to accept peacekeeping forces on disputed territory[5], a reduction in the number of nations contributing to the peace process, and an enhanced Western role in peacekeeping. Each of these are discussed in turn in the following paragraphs.

14. **A diminished willingness on the part of some combatants to accept peacekeeping forces on disputed territory due to the perceived relationship between such technologies and intelligence gathering.** Nations in a state of war distrust sophisticated systems of surveillance and detection. This is unsurprising; these provide a deep monitoring and force assessment capability that potentially reveals a great deal more than would be discovered by traditionally outfitted UN troops. This serves to both limit negotiation options and display weaknesses. As F.T. Liu observed in 1983 (then UN Assistant Secretary-General for Special Political Affairs);

[5] This is less of a concern in the event that the trend toward a more aggressive UN continues.

> (T)he success of a UN peacekeeping force depends essentially on political factors - mainly the cooperation of the parties concerned and the support of the Security Council. If these conditions are met, a UN peacekeeping force can be very successful even if it does not have any sophisticated devices. It must also be noted that in the very delicate situations in which UN peacekeeping forces operate, the parties concerned are often extremely suspicious and may object to the use of too-sophisticated detection devices by the UN because they do not want any probing into their security systems.[6]

15. The importance of this should not be underestimated. A respondent observed that on one notable occasion a protracted period of delicate negotiation failed to convince the parties involved in a territorial dispute that Canadian peacekeepers should be permitted to employ a ham radio. Another officer expressed amazement at the high-level concern over the kit used by his troops during patrols in contested ground. "I couldn't believe how much they wanted to know", he noted; "Detailed lists of everything in every vehicle at all times, including flashlights and stuff the soldiers carried".

16. In addition, technology symbolizes Western power and influence in many ways throughout the world. The UN ordinarily attempts to avoid as far as possible overt association with the West. For obvious reasons, the recent unusual reliance upon, and apparent success with, high-tech weaponry in the Gulf conflict may serve to exacerbate this difficulty.

17. **A potential reduction in the number of member nations contributing to the peace process.** A place at the negotiating table is often contingent upon making a meaningful contribution to conflict resolution, and a reliance upon high-tech systems may diminish the number of nations capable of making either a concrete contribution or useful

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[6] in Liu, 1983: 26.

support. One of the successes of peacekeeping to this point has been that virtually any nation has been able to participate - even poorly equipped conscripts or civilian police have performed in a meaningful capacity, and such has opened doors to nations at various levels. If the technological baseline in peacekeeping rises significantly, there is a concern that fewer nations may be able to contribute. The possible consequences may be both the closing of doors to some nations and a reduction in the number of useful mediating voices at the negotiating table in the aftermath of hostilities.

18. **An increasing Western role in peacekeeping.** This potential outcome is a corollary of the issue discussed in the previous section. Limiting the participation of nations to those with substantial indigenous technical acumen would likely enhance the visibility and centrality of Western nations in peacekeeping activities. Many areas of the non-Western world may be less amenable to accepting peacekeeping solutions if they are wholly or largely identified with the West. The image of the UN may change in subtle but significant ways as a result, in a manner affecting a broad range of its activities.

EFFECTIVENESS OF UN PEACEKEEPING OPERATIONS

19. Measuring effectiveness in the performance of military activities is notoriously difficult. This is particularly true of aspects of performance involving human factors, from both a physiological and a behavioral standpoint. Some of these factors are more important in a peacekeeping context than in the case of other military roles, adding to the difficulties of assessing effectiveness. It is also necessary to distinguish what the troops are in fact capable of accomplishing in each circumstance. Peacekeepers may dig into a disengagement area and impose relative calm for decades without incident, while negotiations for a lasting peace are fruitless. More importantly, it is of course possible

to consider many force-mix options in evaluating effectiveness, ranging from deployments consisting entirely of troops to those driven to the greatest extent possible by technological solutions. Respondents were asked to assume deployments weighted toward the technological end of the continuum. This was done in order to identify the most significant problems that we may expect to face to a greater or lesser degree, irrespective of the actual mix of people and equipments that might be selected in a particular mission or operation.

20. Despite these and other hurdles to reaching firm determinations in this area, however, respondents were able to identify three general potential outcomes and issues of concern at the peacekeeping "sharp-end" of replacing troops with systems. Each of these is discussed in the paragraphs below.

21. **"Hot" environments demand a credible military presence.** In some peacekeeping circumstances, only the show of force generated by combat troops is an adequate deterrent to the resumption of hostilities. This is obviously particularly true in the early phases of establishing an operation. Several respondents described situations of great intensity from their peacekeeping experience, with a potential for the loss of lives. In their view, the readiness of their troops was a significant factor in avoiding escalation and conflict during these events. Equally importantly, combat training reduced casualties among the peacekeepers on a day-to-day basis. The knowledge of when to appropriately intervene in an incident and when to "go to ground" is derived in large measure from this training for higher intensity roles.

22. The notion that peacekeeping is a distinct activity that might be enhanced by specially trained technicians with new equipments misses, in the view of many

respondents, the source of Canadian success in peacekeeping to this point. Contrary to the popular wisdom, respondents argued that Canadian performance in peacekeeping has been derived as much from the operational capabilities of CF units as from Canada's oft-noted peaceful stance in international matters. As Brigadier-General Gutknecht recently argued,

> This is a serious and dangerous fallacy which fails to recognize why the Canadian military have done so well and have been asked to participate in all UN peacekeeping missions. The explanation is plain and simple: Canadian sailors, soldiers, and airmen have done well and have been sought after because they are trained to the highest possible standard of their profession, modern sophisticated combat. First, this earns the respect of the belligerents, which is all important, and second, it allows them to recognize and analyze a military situation and control or defuze it before it develops.[7]

23. The establishment of a sound military presence in a hostile context is key to the dissipation of tension among combatants, and it has been military credibility in the broadest sense which has contributed in large measure to the international status of Canada in peacekeeping. As will be discussed later in this report, this supports the view that the appropriate means of enhancing Canadian performance in peacekeeping may be the augmentation of military effectiveness in general. If accepted, this axiom might have important ramifications for procurement decisions.

24. The point of note here is that some operations will not permit the kind of troop reductions (and resultant expected cost savings) which are envisaged by those proposing the adoption of new systems. In operations of lesser intensity, and in those in which a significant measure of stability has been established, this issue is not so relevant and a greater variety of force-mix options are worthy of consideration.

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[7] in Gutknecht, 1992: 3.

25. **Unique demands are made by every operation.** A brief review of the recent history of peacekeeping demonstrates that troops serving under UN colours have found themselves in a wide range of environments. Terrain, weather, the nature of the mandate under which the peacekeepers serve, the capabilities of the combatants, and so on present unique demands in each circumstance. It is unlikely that a single system or baseline mix of systems can be defined that will adequately serve in the accomplishment of all, or even many, peacekeeping mandates. One respondent opined:

> I was involved in setting up communications for several peacekeeping operations, and every time was completely different. We were never sure what would work until we hit the ground, and we were usually wrong the first time. If someone was to ask me to pick a system to use for area surveillance in all those operations, I don't think it exists.

26. It is also notable that peacekeeping forces are expected to move into disputed areas and establish a credible presence virtually overnight. The design and deployment of high-tech systems will require a certain period of planning and testing that may be prohibitive in the crucial early phases of operations.

27. **Escalation of potential for tension for two reasons: a. lack of low-level mediation, and b. reduction in intelligence from combatants.** Perhaps the most important function performed by peacekeeping troops is the dissipation of low-level tension. When an incident occurs, troops on the ground preserve the status quo by resolving minor problems and preventing escalation. One soldier with experience of several peacekeeping tours summed up his efforts in the following way.

> Probably the most important thing I ever did was find this one guy who was wandering around by himself in the wrong place at the wrong time. Things

> were pretty tense then, and I don't know what he was trying to do. Maybe he was lost, or whatever. I don't know. I stuffed him in the jeep and drove him back to his people. Nobody ever knew I did that.

28. Remote systems may not serve to facilitate this crucial ability to resolve minor problems. Most such systems would generate information at a central monitoring agency, in all likelihood recording and disseminating data to all parties, possibly turning minor events into significant incidents. While strict procedures may reduce the frequency of that kind of difficulty, Alford notes that

> There is also something psychologically important about the frequent physical presence of neutral patrols in zones of disengagement both to reassure and to deter violation. To argue - as some do - that modern sensor technology can entirely replace the peacekeeper in the monitoring role is, in my view, both to place too much faith in technology and to downplay the importance of the acceptably neutral man as a deterrent to violation.[8]

29. As well, the trust that develops between UN troops and combatants is extremely important. Intelligence generated by interaction with combatants has provided long-range warning prior to significant incidents. Sophisticated systems may provide real-time notification of problems as well as some forecasting, but cannot acquire the confidential information often achieved by troops on the ground. The analogy of the "beat cop" is relevant here; many urban police forces in North America have recognized that the intimacy that develops between police and citizens at the micro-level is crucial, and have moved toward a relatively dispersed community-based form of organization, and away from highly centralized, mobile forces that respond to incidents through direction from a central agency employing sophisticated communication and resource management systems.[9]

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[8] In Alford, 1983: 59.

[9] Mr Fred Cameron of ORAE made this useful link between civil policing and peacekeeping.

CONSEQUENCES FOR THE CANADIAN FORCES

30. Respondents identified five potential outcomes for the Canadian Forces should peacekeeping demand special equipments. In considering their responses to this issue, personnel were asked to assume that the majority of costs associated with future peacekeeping operations would be borne by the participating nations. The points raised here are of limited utility from a UN point of view, and do not express DND policy in any way. They represent general issues and problems for the CF that the respondents anticipate may be connected with the procurement of new systems. As will be obvious in the following pages, a consistent theme is the impact of role-specific equipments.

31. **Increased CF employment in peacekeeping.** The UN has called upon the CF extensively in all capacities, and in recent years has done so particularly for logistical and communications expertise; Canada is frequently involved when operations and missions require technical solutions. As well, of course, Canadian skills in traditional peacekeeping continue to be in demand. A trend toward more technically sophisticated UN deployments is expected by the respondents to mean greater reliance upon Canadian resources. It is true, however, that Canadian participation would likely increase in any case if the UN continues to be more assertive in establishing peacekeeping operations. The specific potential difficulty that new systems may create for the CF is, in the view of several respondents, a greater possibility of entrenchments along the lines of the Cyprus experience. Unless these systems are purchased and coordinated by the UN, and this is perhaps unlikely, there will be a variety of pressures reducing the likelihood of national troop rotations. If the CF acquires such equipments for use in peacekeeping and installs them in an operation, it may be very difficult to facilitate the removal of CF personnel and establish their replacement by other forces after a reasonable period of time.

32. **Increased complexity of Command, Control, and Communications (C3).** The use of sophisticated systems to collect data, conduct timely analyses, facilitate decision-making, and disseminate orders is a significant problem in military forces throughout the world. New systems must be incorporated into the broader means the CF employs in managing information. That problems already exist in this area is admitted by the respondents, but several argue that the addition of new highly technical systems of this nature would exacerbate the current C3 difficulties. This would be problematic only in the event that the systems are role-specific; that their adoption was solely or chiefly for use in peacekeeping operations.

33. An associated potential difficulty is the requirement to establish C3 linkages among the forces participating in a given operation. Ordinarily, the forces of each participating member nation tend to operate as autonomously as possible, and it is further worth noting that a plethora of C3 systems and strategies are employed by these forces. Enhanced linkages may both introduce an unusual degree of connectivity among participating forces and present a range of technical challenges.

34. **Potential diversion of capital funds.** The Department is attempting to increase the proportion of its budget devoted to capital expenditures, a goal which may not be supported by the procurement of some of the systems available for use in surveillance and detection. In order to achieve a sufficient degree of effectiveness across a range of roles and operating environments under conditions of fiscal austerity, an appropriate emphasis might be on the enhancement of fundamental, rather than specific, capabilities. It is possible that funds that might have gone to multiple-role-capable equipments will be devoted to technologies that are useful to the CF in its performance of peacekeeping, potentially reducing gains in effectiveness that might have been made in the performance

of other roles. As Lieutenant-General Gervais observed recently,

> A rational assessment of Canada's security needs at home and abroad...clearly reinforces the need to maintain defence forces, including ground forces, which are balanced in nature and which have sufficient muscle to respond to a wide range of threats both real and potential... In times of fiscal restraint, equipping and training forces for a single level of conflict or for a specific task is a luxury that Canada can ill afford.[10]

35. **Increased training costs.** These costs are both direct, such as in the training of those who will operate and maintain new systems, as well as indirect, in that a certain amount of existing training will have to be foregone in an already overburdened training year. If a rigorous cost-benefit adjudication of the savings expected to accrue from buying systems to deploy in the place of military personnel is conducted, all costs associated with their acquisition, maintenance, recruitment and training for operators, and so on should be considered.

36. **Enhancement of the "constabulary ethos".** Evidence has not as yet been found in this country for this problem that has been identified among military personnel in several NATO member nations (Moskos, 1975; Foster, 1984; Segal, et al, 1984; Segal and Meeker, 1985; Devilbiss, 1982). Concerns have been expressed that the ethos of the peacekeeper is in some important respects contrary to that of the soldier, and that increasing demands on the CF for the performance of peacekeeping operations may alter the military ethos of our personnel, away from that of the soldier and toward that of the international police officer. If increased training time is allocated to preparation for

[10] Gervais, 1991: 7-8.

peacekeeping, and peacekeeping-specific equipments are acquired, subtle but important shifts in the ethos of CF personnel in the "constabulary" direction may occur. The key question for the military profession in this regard is, in the view of Morris Janowitz, "whether a force effectively committed to a deterrent philosophy and to peacekeeping and the concept of military presence can maintain its combat readiness"[11].

37. This section reviewed the main findings drawn from the interviews with CF respondents. In the following section, a proposed program of research which might be undertaken prior to moving ahead with procuring systems for peacekeeping use is discussed. The scope of the proposed work was suggested by the findings discussed in this section.

[11] quoted in Foster, 1984:276.

SECTION 2: THE WAY AHEAD - ANALYTICAL TASKS REMAINING

38. One of the findings to emerge from this research is that assumptions that technical solutions will both improve effectiveness and save money for the UN and member nations should be subjected to rigorous analyses. Respondents suggested that there may be a wide range of unanticipated consequences if reliance upon troops in peacekeeping operations shifts toward technically-driven solutions. The best outcome is, of course, the procurement of systems which both enhance peacekeeping effectiveness and suppress these potential consequences. Toward that end, the following program of research is proposed as appropriate before serious considerations of procurement might begin.

(1) Generate a comprehensive historical data base of UN operation and mission environments, with particular attention to factors germane to the configuration, selection, installation, and operation of surveillance and detection systems.

(2) Define parameters of operational effectiveness in a peacekeeping context, based on historical data and contemporary UN commitments. This information is needed to identify the conditions under which technically-driven solutions might be appropriate.

(3) Define the configuration of systems needed to enhance effectiveness and set performance and reliability criteria.

(4) Assess availability of systems meeting performance and reliability criteria.

(5) Conduct cost-benefit analyses. Identify the direct and indirect costs associated with systems procurement options, and rigorously evaluate the relative merits of systems and personnel force-mix solutions.

39. The groundwork for several aspects of this program has been completed, notably by CRAD establishments, which have surveyed off-the-shelf systems in conjunction with this study, as well as by ORAE, which is building a peacekeeping data base. An important note is that future work in this area might benefit from critical input from the operators, from those who will use the equipment in the field under UN colours. This is, of course, a typical part of the procurement process under ordinary circumstances, as are several of the steps listed in the previous paragraph.

CONCLUSION

40. This report must not be read as a condemnation of the usefulness of sophisticated systems in peacekeeping. Advantages of new technologies are relatively clear, and numerous sources exist for this kind of information. This study adopted a critical orientation toward the issue, permitting a more balanced assessment and identifying a number of factors that may be useful in future procurement efforts. While the utility of this report is in the specific points made by the respondents, two general conclusions may be reached. Firstly, claims of technological prowess and dramatic cost savings deserve rigorous analytical attention. Secondly, emphasis on the procurement of equipments that enhance overall military effectiveness is a recommended strategy in improving peacekeeping performance.

41. If the human presence between combatants is to be scaled back, more comprehensive assessments of the equipments proposed for the replacement of peacekeeping troops than have been conducted to this point are needed. The environments in which peacekeeping forces are expected to serve are of higher intensity than has typically been the case in recent years. The conditions under which deployments based upon a relatively small number of personnel with sophisticated equipments can occur may prove to be difficult to satisfy under contemporary circumstances. The example which is frequently cited in support of technical solutions is the Cyprus debacle. While respondents to this study tended to agree that the ongoing Cyprus operation is a relatively low-intensity one, several described events in which the presence and actions of well-trained soldiers prevented incidents from escalating into potentially serious problems.

42. The Canadian Forces are, it is little necessary to note, overburdened with roles and are likely to be expected to continue to perform these in the short- to medium-term, with

further resource reductions a probability. In sum, experienced military personnel with substantial experience in peacekeeping who contributed to this study believe that the introduction of high-tech systems should be accomplished carefully. Role-specific equipments are expected to tax capital budgets and training. The best means of improving Canada's effectiveness as a peacekeeping nation, in the view of the respondents to this study, is by augmenting fundamental military capabilities. In an editorial written upon his return from Sarajevo, Major-General MacKenzie made the following observations.

> With the increasing profile of peacekeeping in the world and Canada's well-earned reputation as loyal and effective members of the peacekeeping community, there are those who suggest that we should stop training for combat and limit our training to peacekeeping... There are those who postulate that you can recruit someone off the street, put a blue beret on them, give them a few weeks "peacekeeping" training and send them into the world with a rifle and twenty rounds of ammunition to be a peacekeeper... It wouldn't work and it would be extremely irresponsible to do so. Soldiers trained for combat have the best "peacekeeping" training there is. There is no need to spend a lot of time, effort and resources seeking another solution...[12]

43. There is little doubt among the respondents that systems can be identified that avoid the difficulties documented in this report. The need for area surveillance is common througout the operational sectors of the CF. The utility of multiple role-capable equipments, serving to enhance military operational effectiveness across a range of performance areas while having a direct impact on peacekeeping, may be a useful initial premise to adopt in adjudicating procurement requirements for peacekeeping surveillance and detection systems.

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[12] in the Ottawa Citizen, August 28, 1992.

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